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09/890,695	08/03/2001	Pierre Olry	BDL-356XX	6216

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EXAMINER

LISH, PETER J

ART UNIT PAPER NUMBER

1754

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/890,695

Applicant(s)

OLRY ET AL.

Examiner

Peter J Lish

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see amendment after final, filed 8/9/04, with respect to the rejection(s) of claim(s) 1-16 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the amendment and request for continued examination, filed 9/7/04.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinari et al. (US 4,543,241).

Yoshinari et al. teaches a process for the continuous carbonization of cellulose fibers or fiber fabrics. The process requires gradually heating the fabrics under an increasing temperature within a range of 300 to 900 °C under an inert gas. The carbonization is carried out in a multi-stage furnace which employs three or more independent heating chambers. Each chamber has an independent heating source (4a, 4b, and 4c in figures 1) and is separated from its adjoining chamber(s) by an inert gas blanket or shield. While the individual temperature ranges and rates of heating for each zone employed in the carbonization of a variety of cellulose materials are not

explicitly taught by Yoshinari et al., it would have been obvious to one of ordinary skill at the time of invention to select temperatures, heating rates, and residence time within the ranges claimed by the applicant in order to achieve optimal properties of the carbonized fabric product (based on the cellulosic starting material), as doing so is viewed to be the optimization of a known process, which could have been determined through routine experimentation, and is held to be obvious by *In re Boesch*, 205 USPQ 215.

Claims 1-3 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinari et al. in view of Otani et al. (US 3,461,082).

Yoshinari et al. teaches a process for the continuous carbonization of cellulose fibers or fiber fabrics. The process requires gradually heating the fabrics under an increasing temperature within a range of 300 to 900 °C under an inert gas. The carbonization is carried out in a multi-stage furnace that employs three or more independent heating chambers. Each chamber has an independent heating source (4a, 4b, and 4c in figures 1) and is separated from its adjoining chamber(s) by an inert gas blanket or shield. These individual chambers serve to prevent the flow of decomposition gases between chambers, which prevents tar mist deposition and subsequent decrease in the carbon fiber products. Yoshinari et al do not explicitly teach the individual temperature ranges and rates of heating for each zone employed in the carbonization of a variety of cellulose materials.

Otani et al. teaches a process for the carbonization and activation of lignin fibers, made from the chemical treatment of woody cellulosic materials. The carbonization is carried out by gradually heating the material up to a temperature of between 600 and 1000 °C at a rate of less

than 50 °C/min. Given the temperature and heating rate limitations of Otani et al., it would have been obvious to one of ordinary skill at the time of invention to select temperatures, heating rates, and residence time within the ranges claimed by the applicant in order to achieve optimal properties of the carbonized fabric product, as doing so is viewed to be the optimization of a known process, which could have been determined through routine experimentation, and is held to be obvious by *In re Boesch*, 205 USPQ 215.

Claims 1-3 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshinari et al. in view of Nishino et al. (US 4,409,125).

Yoshinari et al. teaches a process for the continuous carbonization of cellulose fibers or fiber fabrics. The process requires gradually heating the fabrics under an increasing temperature within a range of 300 to 900 °C under an inert gas. The carbonization is carried out in a multi-stage furnace that employs three or more independent heating chambers. Each chamber has an independent heating source (4a, 4b, and 4c in figures 1) and is separated from its adjoining chamber(s) by an inert gas blanket or shield. These individual chambers serve to prevent the flow of decomposition gases between chambers, which prevents tar mist deposition and subsequent decrease in the carbon fiber products. Yoshinari et al do not explicitly teach the individual temperature ranges and rates of heating for each zone employed in the carbonization of a variety of cellulose materials.

Nishino discloses a method for the continuous carbonization and activation of cellulosic fibers or fiber fabrics, whereby the fiber fabrics are carbonized under an inert gas, such as nitrogen, for between about 0.25-2 hours at a temperature that gradually increases up to 750 °C

(column 2, lines 60-65). The heating up rate is about 5 °C/min to 75 °C/min and preferably about 10 °C/min to 45 °C/min (column 2, line 65 to column 3, line 9). It would have been obvious to one of ordinary skill at the time of invention to employ the temperatures, heating rates, and residence time of Nishino, which are seen to fall within the presently claimed ranges, when treating cellulosic fiber fabrics using the process of Yoshinari et al., in order to achieve desired properties of the carbon products.

Claims 4-6 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. as applied to claims 1-3 and 10 above, and further in view of Saji et al. (US 4,073,870).

Yoshimari et al. teaches that prior to the carbonization process, the cellulose fibers or fiber fabrics are pre-oxidized. The exact conditions of this pre-oxidation treatment are not explicitly taught. Saji et al., however, teach that pre-oxidation generally comprises heating the fibers in air at a temperature of between 200 to 300 °C for a time of about 1 to 5 hours (column 3, lines 9-16). It would have been obvious to one of ordinary skill at the time of invention to perform the pre-oxidation of Yoshimari et al. under the conditions taught by Saji et al. to be effective, in order to achieve the desired pre-oxidized fibers.

Claims 4-6, 11-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. in view of Nishino et al., or alternatively Yoshimari et al. in view of Otani et al., as applied to claims 1-3 and 9-10 above, and further in view of Saji et al. (US 4,073,870).

Yoshimari et al. teaches that prior to the carbonization process, the cellulose fibers or fiber fabrics are pre-oxidized. The exact conditions of this pre-oxidation treatment are not explicitly taught. Saji et al., however, teach that pre-oxidation generally comprises heating the fibers in air at a temperature of between 200 to 300 °C for a time of about 1 to 5 hours (column 3, lines 9-16). It would have been obvious to one of ordinary skill at the time of invention to perform the pre-oxidation of Yoshimari et al. under the conditions taught by Saji et al. to be effective, in order to achieve the desired pre-oxidized fibers.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. as applied to claim 1 above, and further in view of Perkins (GB 1,136,349).

Yoshimari et al. does not explicitly teach the graphitization of the carbonized fibers. Perkins teaches that carbon fibers, produced from a similar treatment of cellulose material, may be graphitized by quickly heating from 800 °C up to 2800 °C in a 10 minute time period (Table 1). It would have been obvious to one of ordinary skill at the time of invention to perform the graphitization treatment of Perkins on the carbon fiber produced by Yoshimari et al. in order to produce a graphite product.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. in view of Saji et al. as applied to claim 13 above, and further in view of Perkins (GB 1,136,349).

Yoshimari et al. does not explicitly teach the graphitization of the carbonized fibers. Perkins teaches that carbon fibers, produced from a similar treatment of cellulose material, may be graphitized by quickly heating from 800 °C up to 2800 °C in a 10 minute time period (Table

1). It would have been obvious to one of ordinary skill at the time of invention to perform the graphitization treatment of Perkins on the carbon fiber produced by Yoshimari et al. in order to produce a graphite product.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. in view of Nishino et al., or alternatively Yoshimari et al. in view of Otani et al., as applied to claim 1 above, and further in view of Perkins (GB 1,136,349).

Yoshimari et al. does not explicitly teach the graphitization of the carbonized and activated fibers. Perkins teaches that carbon fibers, produced from a similar treatment of cellulose material, may be graphitized by quickly heating from 800 °C up to 2800 °C in a 10 minute time period (Table 1). It would have been obvious to one of ordinary skill at the time of invention to perform the graphitization treatment of Perkins on the carbon fiber produced by Yoshimari et al. in order to produce a graphite product.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimari et al. in view of Nishino et al. and further in view of Saji et al., or alternatively Yoshimari et al. in view of Otani et al. and further in view of Saji et al., as applied to claim 13 above, and further in view of Perkins (GB 1,136,349).

Yoshimari et al. does not explicitly teach the graphitization of the carbonized and activated fibers. Perkins teaches that carbon fibers, produced from a similar treatment of cellulose material, may be graphitized by quickly heating from 800 °C up to 2800 °C in a 10 minute time period (Table 1). It would have been obvious to one of ordinary skill at the time of



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invention to perform the graphitization treatment of Perkins on the carbon fiber produced by Yoshimari et al. in order to produce a graphite product.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Lish whose telephone number is 571-272-1354. The examiner can normally be reached on 9:00-6:00 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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